

ATMOSPHERIC CF_2Cl_2 AND CFCl_3 IN ANTARCTICA
OVER THE PERIOD BETWEEN FEBRUARY 1982
AND JANUARY 1987 (ABSTRACT)

Michio HIROTA¹, Masashi FUKABORI², Takashi YAMANOUCHI³
and Yukio MAKINO²

¹*Aerological Observatory, 1-2, Nagamine, Tsukuba 305*

²*Meteorological Research Institute, 1-1, Nagamine, Tsukuba 305*

³*National Institute of Polar Research, 9-10, Kaga 1-chome, Itabashi-ku, Tokyo 173*

In order to understand the global distributions and trends of atmospheric CF_2Cl_2 , CFCl_3 , and N_2O , air samples have been collected at Syowa Station since February 1982 (JARE-23). Samples were analyzed by a GC-ECD method.

In JARE-27, seventeen air samples were collected at Syowa Station between February 1986 and January 1987. Linear trends were calculated with the data of the period between February 1982 and January 1987. Volume mixing ratios as of Januaries 1985 and 1987 were 345 and 376 ppt for CF_2Cl_2 , and 202 and 222 ppt for CFCl_3 . Annual increases were 15 ppt/year for CF_2Cl_2 and 10 ppt/year for CFCl_3 . According to RASMUSSEN and KHALIL (Science, **232**, 1623, 1986), volume mixing ratios as of January 1985 were 354 ppt for CF_2Cl_2 and 205 ppt for CFCl_3 , and annual increases between Januaries 1982 and 1985 at the South Pole were 17 ppt/year for CF_2Cl_2 and 9 ppt/year for CFCl_3 . These are in agreement with ours. These results indicate that atmospheric CF_2Cl_2 and CFCl_3 have been still accumulating in the 1980's in Antarctica.

(Received March 22, 1988)

MEASUREMENTS OF THE ATMOSPHERIC MINOR
CONSTITUENTS AT SYOWA STATION,
ANTARCTICA, IN 1986 (ABSTRACT)

Masashi FUKABORI¹, Yukio MAKINO¹, Masayuki TANAKA²,
Sadao KAWAGUCHI³ and Takashi YAMANOUCHI³

¹*Meteorological Research Institute, 1-1, Nagamine, Tsukuba 305*

²*Upper Atmospheric Research Laboratory, Faculty of Science,
Tohoku University, Aramaki Aoba, Sendai 980*

³*National Institute of Polar Research, 9-10, Kaga 1-chome, Itabashi-ku, Tokyo 173*

Column amounts of the atmospheric minor constituents were measured at Syowa Station, Antarctica, (69°00'S, 39°35'E) in 1986. Solar spectra were observed by a Fourier transform infrared spectrometer at 0.125 and 0.25 cm^{-1} resolutions. Absorptions due to H_2O , CO_2 , O_3 , N_2O , CH_4 , CF_2Cl_2 , CFCl_3 , and HNO_3 were detected. Column amounts of the respective constituents were determined by comparing the calculated equivalent widths with observed ones. Column amounts of H_2O and O_3 determined by our measurements were compared with values obtained by other techniques. The variations of column amounts were examined with the atmospheric conditions.

(Received April 4, 1988)